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H. E. PAPE

2,367,237

SPINNING BUCKET AND DISCHARGE DEVICE THEREFOR

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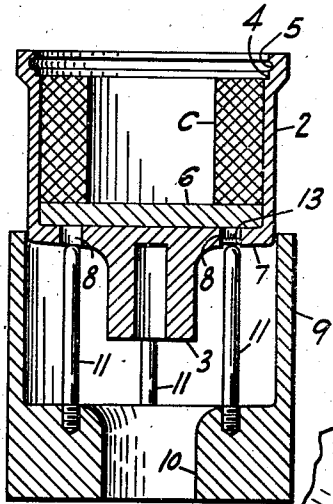


Fig. 1.

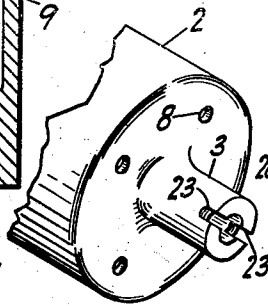


Fig. 5.

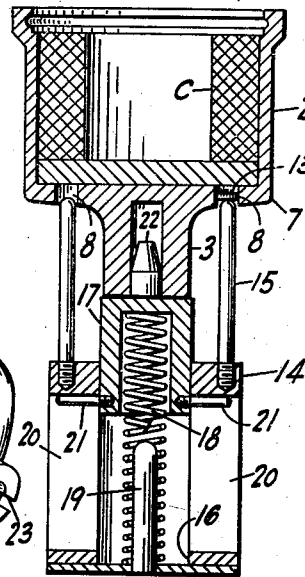


Fig. 4.

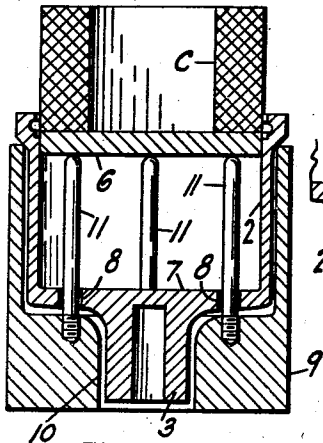


Fig. 2.

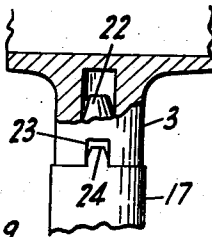


Fig. 6.

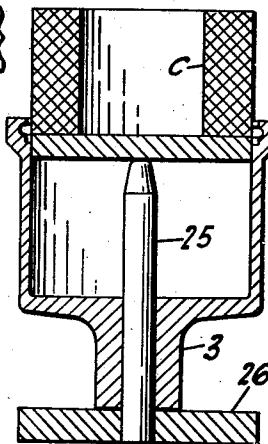


Fig. 7.

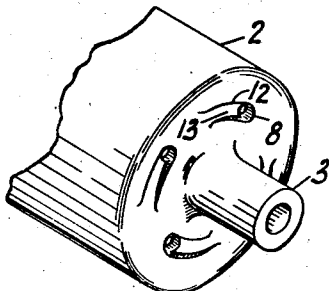


Fig. 3.

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SPINNING BUCKET AND DISCHARGE
DEVICE THEREFOR

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10 Claims. (Cl. 57—54)

This invention concerns an improved spinning bucket construction adapted to facilitate the removal of cakes of yarn or other filamentary material wound or spun therein and also a simple form of accessory adapted to cooperate with the improved spinning bucket to remove the cakes therefrom.

Heretofore, cakes have been removed from spinning buckets by inverting the buckets or by the insertion into the bucket interior of a hand tool with which a bottom plate carrying the cake was seized by means of suitable cooperating elements formed in or on the bottom plate. In accordance with this invention, a system is provided which is simpler from the standpoint both of the character of accessory devices needed and of the manipulative technique needed to remove the cake from the spinning boxes.

In the drawing, illustrative of the invention,

Figure 1 is an elevational cross-section view of a spinning bucket containing a cake about to be placed upon one form of accessory to remove the cake therefrom,

Figure 2 is a view similar to Figure 1 but with the cake ejected from the bucket,

Figure 3 is a perspective view of the bottom of a spinning bucket,

Figure 4 is an elevational cross-section view of a spinning bucket about to be placed upon another form of accessory,

Figure 5 is a perspective showing a modified form of bucket hub,

Figure 6 is an elevation, partly in cross-section showing the hub of Figure 5 cooperating with a complementary form of accessory similar to that of Figure 4, and

Figure 7 is an elevational cross-section view showing the cake ejected from a spinning bucket by a third form of accessory.

Referring particularly to Figures 1 and 2, the invention is illustrated in the form of a spinning bucket 2 having a hub 3 adapted to cooperate with and to be driven by the spindle of a motor (not shown), a groove 4 in the upper portion of the interior of the bucket adapted to receive a cover, a second groove 5 adapted to receive cover-retaining ring, and a false bottom 6 adapted to support the cake, the bottom being readily removable. This bottom plate may be like any of the types of plates heretofore suggested which contain elements formed in or upon the upper surface thereof by which it is adapted to be seized by the tools inserted into the bucket in accordance with prior methods. However, such auxiliary elements upon the plate are en-

tirely unnecessary and are preferably avoided. For the purposes of this invention, a simple round plate or disk having plane surfaces is entirely satisfactory and has the advantages of being free of projecting elements which offer irregular surfaces or recesses which tend to catch lint, salt crystals, or dirt and tend to interfere with uniform winding of the filamentary material being collected in the bucket. The walls and actual bottom of the spinning bucket may be provided with the conventional form of perforations to drain the liquids therethrough where the bucket is to be employed in collecting freshly spun filamentary material which is still wet. In addition, the actual bottom 7 of the bucket is provided with a plurality of openings 8 (four being shown though as few as two or any greater number than two may be used).

The form of device shown in Figures 1 and 2 for removing the cake C from the bucket comprises a cup-like shell 9 having a central opening 10 at the bottom thereof adapted to receive the hub 3 of the bucket and provided with an annular group of upstanding pins 11 which are preferably though not necessarily slightly shorter in height than the inside wall of the cup 9 so that the bottom 7 of the bucket when partially inserted into the cup 9 will act to center the bucket therein. Then, merely by turning the bucket within the upper edge of the cup, the operator will cause the holes 8 in the bottom 7 of the bucket to register with the pins 11 in the cup 9 and thereupon the bucket 2, falling of its own weight or with the aid of a slight push, if necessary, will cause the plate 6 supporting the cake within the bucket 2 to be raised by the pins 11 until the position shown in Figure 2, is reached. The operator can then remove the cake from the raised bottom plate 6. To facilitate the registering of the openings 8 in the bottom of the bucket with the pins 11, arcuate grooves 12 having sloped bottoms 13 may be formed in the bottom 7 of the bucket adjoining the openings 8 as shown in Figure 3. While the grooves 12 are shown in Figure 3 as approaching the openings 8 from one direction, they may as well be provided to slope into each of the openings from both directions.

It is apparent that an annular ring whose band width is sufficient to support the cake and to cover the openings 8 in the bottom of the bucket 2 may be substituted for the simple disk or plate 6 shown in Figures 1 and 2. In such event, the button having a height substantially

equal to the thickness of the ring should be provided in the center of the bottom of the bucket.

In Figure 4, a modified form of accessory is shown in the form of a block 14 whose upper surface is provided with the upstanding pins 15 adapted to raise the bottom plate 6 with the cake in the spinning bucket 2. This block 14 is provided with a bore 16 adapted to receive a sort of piston 17 in the form of an inverted cup the internal bore of which receives one end of a spring 18 which tends to force the piston upwardly. The spring is guided by a stationary post 19 projecting upwardly within the bore 16 of the block. The block is provided with two vertical slots 20 extending from the bore 16 to the exterior of the block 14. These slots 20 are adapted to receive two pins 21 secured upon the piston 17 and serve to limit the upward motion of the piston to the position shown in Figure 4. The top of the piston 17 is provided with a centering pin 22 adapted to cooperate with the spindle-receiving bore of the hub 3 of the spinning box. The spring 18 may be sufficiently stiff to support the weight of the loaded spinning box in the position shown in Figure 4 in which event ejection of a cake is accomplished by manually depressing the spinning bucket upon the piston 17 after registering the pins 15 with the openings 8. Preferably, the pins 15 are of such height that the lower surface of the bottom 7 of the spinning bucket will strike the top of the pins 15 after the hub 3 of the bucket has been centered by pin 22 but before it comes to rest upon the top surface of the piston 17. In this way, the holes 8 of the bucket can be registered upon the pins 15 by simply turning the bucket after it is centered without having to press it against the piston 17. On the other hand, the stiffness of the spring may be sufficient to hold the piston in the uppermost position shown but insufficient to support in addition the weight of the spinning bucket carrying the cake in which event, after centering the spinning bucket upon the center pin 22 and turning it to register the openings 8 with the ejector pins 15, the bucket will fall of its own weight, thus ejecting the cake.

Figures 5 and 6 show a modified form of device for assisting registering of the ejector pins 15 with the openings 8 in the bottom of the bucket. In this form, a pair of aligned slots 23 are provided in the base of the hub 3 while piston 17 of Figure 4 is provided with a complementary pair of upright projections 24 on opposite sides of the centering pin 22, the projections 24 being so arranged with respect to the ejector pins 15 that when the slots 23 in the hub 3 fall over the projections 24, the openings 8 in the bottom of the spinning bucket are in register with the pins 15 of the ejector device.

In Figure 7, a modified form of the invention is disclosed in which the driving-spindle receiving bore of the spinning box extends clear through the hub 3 and the ejector device consists simply of an upright pin 25 supported on a suitable base 26. This pin 25, as well as the ejector pins 11 and 15 and the centering pin 22 of the previous embodiments, is preferably tapered or rounded off at its top to facilitate the insertion thereof into the spindle bore of the hub or other openings or bores respectively.

The lengths of the ejector pins in the several embodiments may be so correlated with respect to the thickness of the cake-supporting ejector plate within the bucket that any desired eleva-

tion of the cake with respect to the bottom of the box may be obtained. For example, the arrangement may be so designed that the upper surface of the bottom plate supporting the cake is adapted to be raised completely out above the upper rim of the bucket. In this case, it is preferred that the thickness of the plate be such that its bottom surface will not be raised to a level above the cover-receiving ledge 4 on the inside of the bucket rim when the plate is lifted to its uppermost position by the ejector device. Preferably, the pins are of a length comparable to the sum of the depth of the bucket and the thickness of the portion of its bottom through which the openings extend.

The cake-ejecting accessory (or a plurality thereof) may be fastened directly to the framework of the spinning or twisting machine or to a suitable separate support nearby where it will be convenient to the operator when doffing. Alternatively, each doffer's truck used for receiving the cakes doffed may be provided with one of the cake-ejecting devices of this invention. The vertical disposition of the device, that is with the ejector pins arranged vertically, is ordinarily preferred though under some circumstances, an inclined disposition may be more satisfactory.

While preferred embodiments of the invention have been shown, it is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. In combination, a spinning bucket comprising at least one opening extending through the bottom of the bucket, a cake-supporting element within the bucket resting over said opening or openings, and means comprising one pin for each opening arranged to extend through the opening or openings and to cooperate with the element to displace it axially of the bucket said pin being comparable in length to the sum of the depth of the bucket and the thickness of the portion of its bottom through which it extends.

2. In combination, a spinning bucket comprising one opening extending axially through the bottom of the bucket, a cake-supporting disk within the bucket resting over said opening, and a pin insertable through said opening to displace the disk axially of the bucket said pin being comparable in length to the sum of the depth of the bucket and the thickness of the portion of its bottom through which it extends.

3. In combination, a spinning bucket comprising, symmetrically disposed about the axis of the bucket, a plurality of openings extending through the bottom thereof in a direction substantially parallel to the axis, a cake-supporting element within the bucket resting over said openings, and a plurality of pins arranged to permit simultaneous insertion thereof into said openings to displace the element axially of the bucket said pins being comparable in length to the sum of the depth of the bucket and the thickness of the portion of its bottom through which it extends.

4. In combination, a spinning bucket comprising, symmetrically disposed about the axis of the bucket, a plurality of openings extending through the bottom thereof in a direction substantially parallel to the axis, a cake-supporting element within the bucket resting over said openings, a plurality of pins arranged to permit si-

multaneous insertion thereof into said openings to displace the element axially of the bucket, and means for centering the bucket with respect to the pins said pins being comparable in length to the sum of the depth of the bucket and the thickness of the portion of its bottom through which it extends.

5. In combination, a spinning bucket comprising, symmetrically disposed about the axis of the bucket, a plurality of openings extending through the bottom thereof in a direction substantially parallel to the axis, a cake-supporting element within the bucket resting over said openings, a plurality of pins arranged to permit simultaneous insertion thereof into said openings to displace the element axially of the bucket, means for centering the bucket with respect to the pins and means for facilitating registering of the openings with the pins.

6. A device for ejecting cakes from spinning buckets comprising a member having a recess adapted to receive a spinning bucket and a plurality of upright pins secured to the bottom of the recess.

7. A device for ejecting cakes from spinning

buckets comprising a member having a recess adapted to receive a spinning bucket and a plurality of symmetrically arranged upright pins secured to the bottom of the recess.

8. A device for ejecting cakes from spinning buckets comprising a member having a recess adapted to receive a spinning bucket and a plurality of symmetrically arranged upright pins secured to the bottom of the recess, the top of the pins being below the rim of the recess.

9. A device for ejecting cakes from spinning buckets comprising a block supporting a plurality of symmetrically arranged upright pins.

10. A device for ejecting cakes from a spinning bucket comprising a block having a centrally disposed guideway and supporting a plurality of upright pins symmetrically arranged thereabout, a member provided with a centering pin slidably disposed in said guideway, spring means arranged to oppose displacement of the member into the block and means on said block and member cooperating to limit the displacement caused by said spring means.

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